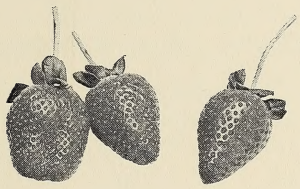
Mathematics

Module 8

What Does the Data Show?

Home Instructor's Guide: Day 1–9
and
Assignment Booklet 8A



Learning Technologies Branch

Alberta LEARNING

Grade Two Mathematics
Module 8: What Does the Data Show?
Home Instructor's Guide: Days 1–9 and Assignment Booklet 8A
Learning Technologies Branch
ISBN 0-7741-2049-5

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Students	✓
Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	

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- Alberta Learning, **http://www.learning.gov.ab.ca**
- Learning Technologies Branch, **http://www.learning.gov.ab.ca/ltb**
- Learning Resources Centre, **http://www.lrc.learning.gov.ab.ca**

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Module 8: What Does the Data Show?

Introduction

The first part of this module focuses on collecting, organizing, recording, describing, presenting, and interpreting data. The second part focuses on probability—the chance of something occurring.

The student can become overwhelmed with the amount of data (information) that surrounds him or her. To make sense of the data, the student will learn data-collection techniques, methods of organizing and recording the data, and a variety of ways that data can be presented. The student will work with picture graphs, concrete object graphs, bar graphs, charts, lists, tallies, and diagrams.

Probability activities contribute to the development of problem-solving skills. The student hears and makes probability statements everyday, such as, "I'm sure it will rain today," or "I don't think I'll roll a two." The student will conduct experiments to determine if events are likely, unlikely, probable, or expected to occur.

To reinforce and transfer these concepts, use graphing in all subject areas whenever possible. The student can graph his or her growth, the number of books read, progress in spelling, the weather, plant growth, new vocabulary learned, the foods he or she eats for lunch, and so on. The student can use stickers to record some of the data.

Have the student discuss the probable outcomes of stories and events in language arts and other subject areas. Ask the student to say whether events that occur in his or her own experience are likely or unlikely to happen. Encourage the student to work on the Extension Activities.

Materials You Need

- existing manipulatives in the student's Math Box
- small plastic container or small box
- small bag (paper or cloth)
- paper cup
- materials in the Appendix (Have these materials cut out and ready to use. Place these items in the Student Folder.)

Daily Summary

Day 1

Today is a review of Module 6.

Answers

1. a. 6 cm, 3 cm, 5 cm

   The shortest tulip is 3 cm long and should be coloured purple. The longest one is 6 cm long and should be marked with an X.

   b. 4 cm, 7 cm, 8 cm

   The shortest tulip is 4 cm long and should be coloured purple. The longest one is 8 cm long and should be marked with an X.

2. a. 9 cm, 8 cm, 10 cm, 11 cm 2, 1, 3, 4
   b. 7 cm, 13 cm, 10 cm, 9 cm 1, 4, 3, 2

3. a. less than
   b. less than
   c. less than
   d. more than
   e. more than
   f. more than

4. a. less than
   b. more than
   c. less than
   d. more than
   e. less than
   f. more than

5. a. m
   b. dm
   c. cm
   d. m
   e. cm
   f. dm

6. These may include a marble and a marshmallow, a cup and an air-filled balloon, or any small object that is heavier than a larger object.

7. a. rise
   b. fall
   c. fall
   d. rise

8. a. C
   b. A
   c. B

9. a. 1
   b. 5
   c. 10
   d. 25
   e. 50
   f. 100
   g. 10
   h. 20
   i. 4

10. Accept any combination of coins to make the amount shown.

11. a. 1 dollar, 100 cents
    b. 2 dollars, 200 cents
    c. 5 dollars, 500 cents
    d. 10 dollars, 1000 cents

Day 2

The students think about things they would like to learn about friends, family, and other things around them.

Day 2: Lesson 1

Things the student would like to learn about others could be hair colour, number of family members, eye colour, height, shoe size, birthdays, what they had for breakfast, and so on. Some favourite things the student lists could be TV shows, ice cream flavours, sports, drinks, snacks, books, colours, fruits, hobbies, movies, pets, games, toys, and so on. Other things students want to learn about can include the growth of a plant, the temperature over a week or a month, how many times certain numbers will appear when tossing a die, how many times a coin will show heads or tails, and so on.

Day 2: Lesson 2

Discuss that a graph summarizes information in a clear and concise way. A graph also answers many questions. Discuss the term *data*. Data are known facts or information that is collected.

Answers

1. a. The graph shows if more people have dogs or cats.
   b. dogs
   c. There are 5 people that have cats.
   d. There were 12 people asked about their pets.

2. a. The graph shows how many children were sick in one week.
   b. Friday
   c. Tuesday and Wednesday
   d. one
   e. Saturday

3. Some of the questions can be the following:

- What information does the graph give you?
- What is the most popular hobby?
- What is the least popular hobby?
- How many people prefer to read?
- How many people prefer to watch TV?
- How many people prefer to play soccer?
- How many people prefer to ride bikes?
- How many people prefer to dance?
- How many people prefer to play the violin?
- How many people were asked about their hobbies?

Have the student do the assignment for Day 2 after completing the day's lessons.

Day 3

The student learns about different ways of collecting data.

Day 3: Lesson 1

Discuss with the student how best to gather information on who wears glasses and who doesn't. In this instance, counting the people who do and don't is the best method.

Day 3: Lesson 2

The student learns about three ways of collecting information: counting (when you need to find out how many), measuring (finding heights, sizes, distances, and so on), and surveying (asking people questions about themselves). Discuss these different methods with the student. Have the student think of examples of each.

Day 3: Lesson 3

Have the student print the names of six friends and family members. On Day 4, the student will measure their feet, in centimetres, with a ruler. The student will then ask each person what his or her favourite fruit is and mark it on a sheet of paper. If it is not possible to collect this information for all six people during the next class, have the student do as many as possible.

Have the student do the assignment for Day 3 after completing the day's lessons.

Day 4

This is a continuation of Day 3. The student will continue to collect data.

Day 4: Lesson 1

Have the student print the results of counting how many people do or don't wear glasses.

Answers

1. $6 - 4 = 2$
2. 2

Day 4: Lesson 2

Have the student print the results of measuring the length of the feet of their friends and family members.

Day 4: Lesson 3

Have the student print the results of surveying people about their favourite fruit.

Have the student go back to Day 2, Lesson 1, to look at the list of things he or she would like to learn about. The student selects one item for each method of collecting data. Ensure the item the student selects can be collected by that method. For example, finding out someone's favourite movie can be obtained only through survey.

Day 5

The student learns about the different ways of recording data.

Day 5: Lesson 1

Discuss ways of recording information. Elicit from the student that Elena and Jasper can make a list of the names of the people, and they can print who does or doesn't wear glasses next to the names. They can make a chart and mark off who does or doesn't wear glasses beside each name. They can also make a picture of the information by drawing each person with or without glasses.

Day 5: Lesson 4

The sorting rule is people who wear glasses are in one group, and people who don't wear glasses are in the other group.

Have the student do the assignment for Day 5 after completing the day's lessons.

Day 6

The student learns about the different ways of presenting data.

Day 6: Lesson 1

Discuss the following different types of graphs the student is familiar with from Grade 1:

- object graphs, where the actual objects are put on display in rows
- picture graphs, where the pictures of the objects or symbols for them are put in rows
- bar graphs, where each object is represented by a filled-in box on graph paper

Day 6: Lesson 2

The student will be making graphs based on data collected from the fruit survey. Assist the student as necessary in thinking of questions to apply to the data in the graph. The student can use the questions previously asked about other graphs as a guide.

Answers

1. a. Elena's friends' favourite fruits
   b. 2
   c. apples

2. a. pear
   b. $3 - 1 = 2$

3. a. 1
   b. $4 - 2 = 2$
   c. The student should be able to add the numbers of fruit. 10, $4 + 2 + 3 + 1 = 10$

Day 6: Lesson 3

The student will arrange the fruit that was chosen on a table. If this is not possible, have the student draw and colour each fruit on a separate piece of paper. Then the student can arrange the fruit, or the pictures of fruit, in rows on the table or desk to make an object graph. The student draws pictures to make a picture graph of the same data. Finally, the student displays the data in a bar graph.

There are extension activities for Days 6 to 12.

Have the student do the assignment for Day 6 after completing the day's lessons.

Day 7

The student learns about recording data using a tally.

Your student will be making graphs on Day 11 using data he or she has collected. Start preparing the student at the end of today's lesson by referring to Day 2, Lesson 1. Have the student select from the list of things he or she wished to learn about friends and family members. Encourage and assist the student to begin collecting data by counting, measuring, or surveying.

Day 7: Lesson 1

Guide the student through the process of recording data with tally marks.

Answers

1. 2	3. 4	5. 9	7. 17
2. 5	4. 10	6. 20	8. 1

Day 7: Lesson 2

Using the example of favourite fast foods, explain to the student how people use data.

Answers

1. a. The data shows Jasper's friends' favourite fast food.
   b. pizza
   c. 3
   d. 5
   e. $11-6=5$, 5
   f. fried chicken Only three children like it.
   g. The parents can use this data to buy food for the party.

2. Number of Votes for Club President

Nahib	Ashley	Selene	Emil	Juan	David	Michael

3. The student may have learned from the graph the number of votes per student, who won the election, the number of votes one student got more than another, who got the least amount of votes, who might become president if the person elected had to step down (the person with the second most votes), and so on.

Have the student do the assignment for Day 7 after completing the day's lessons.

Day 8

This is a review of ways of collecting and organizing data and presenting it in graphs. Remind the student to keep collecting data for Day 11.

Day 8: Lesson 1

Answers

1. a. Marty 𝍸 | | | | b. Mitali 𝍸 𝍸 𝍸 𝍸 | | c. Taylor 𝍸 𝍸 𝍸 | |

2. The title could be Shells Collected by Elena's Friends.

Sandi																							
Marty																							
Mitali																							
Taylor																							

Day 8: Lesson 2

Answers

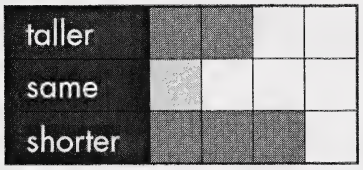
1. a. dictionary and music book
   b. hockey book
   c. math, history, and geography books

2. taller 

   same 

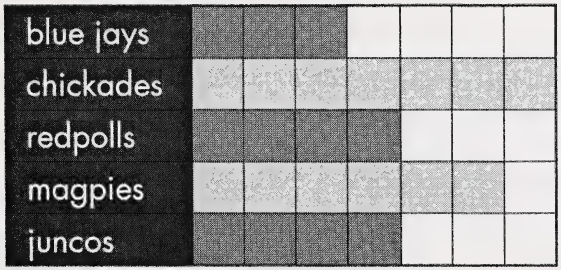
   shorter 

3. Title: Books That Fit (or something similar)



Day 8: Lesson 3

Answers

1. 

2. bar graph

Day 8: Lesson 4

Answers

1. The student draws the animals in the boxes.

Dogs	Cats	Fish	Birds
			
			
			
			
			
			
			

   The order of the animals may be different. Check to make sure the data matches the names. A suitable title might be "Jasper's Friends' Favourite Pets."

2. The following are possible questions:

   - What is the favourite pet?
   - What is the least favourite pet?
   - How many children have fish for pets?
   - How many have dogs?
   - How many children were surveyed?

3. a. $3 - 2 = 1$

   b. $7 - 5 = 2$

   c. No. Elena's friends probably have different pets so the data will be different, making the graph different.

Day 9

The student learns to organize data using charts, lists, and diagrams.

Day 9: Lesson 1

Discuss the experiment Jasper and Elena are conducting with the counters. Go over the combinations and how they are recorded on the chart.

Assist the student with shaking and spilling the two coins if necessary. Ensure that the student properly records the data on the chart.

Answers

The student can write about which combination came up the most often, which came up least often, or how much more frequently one combination came up than another.

Day 9: Lesson 2

Check that the student is correctly making tally marks for each roll of the die. Assist the student if necessary with making the graph with the pattern block data.

Remind the student to keep collecting data for Day 11.

Answers

1. The title can be Rolls of the Die, How Many Times Does the Number Come Up?, or something similar. The graph should look similar to this.

2. The student can ask how many times the other numbers were rolled and how many more times one number was rolled than another.

3. The title could be something like The Number of Sides.

no sides											
three sides											
four sides											

Have the student do the assignment for Day 9 after completing the day's lessons.

The student should be collecting data for Day 11 lessons. Guide the student in his or her efforts.

When the student finishes the assignment on Day 9, direct him or her to the Student Survey and Student Checklist in Assignment Booklet 8A. The student may work on these alone or with your help. Go over the responses and discuss them with the student. Give additional instruction as needed for any of the concepts the student has indicated he or she needs help with.

Ensure that you complete the Home Instructor's Evaluation Checklist and Feedback forms for Days 1–9. In the Home Instructor's Feedback, give any information you think may be helpful for the teacher to know.

Submit Assignment Booklet 8A for marking.

ASSIGNMENT BOOKLET 8A

Grade Two Mathematics
Module 8: Days 1–9

Home Instructor's Comments and Questions

_____
Home Instructor's Signature

FOR HOME INSTRUCTOR USE
(if label is missing or incorrect)

Student File Number:

_____

Grading Scale

A – Very Satisfactory
B – Satisfactory
C – Needs Attention
D – Unsatisfactory

Apply Module Label Here

Name
Address
Postal Code

Please verify that preprinted label is for correct course and module.

FOR SCHOOL USE ONLY

Assigned Teacher:

_____

Grading

Mathematics:

_____

Neatness:

_____

Date Assignment Booklet Received:

_____

Teacher's Comments

_____
Teacher's Signature

Home Instructor: Keep this sheet when it is returned to you as a record of the student's progress.

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When you register for distance learning courses, you are expected to send in Assignment Booklets for corrections regularly. Try to send each Assignment Booklet as soon as you have completed it. Before sending your Assignment Booklet, please check the following:

- Are all the assignments completed? If not, explain why.
- Has your work been reread to be sure the spelling and details are correct?
- Is the record form filled out and the correct module label attached?

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1. Postage Regulations

Do **not** enclose letters with Assignment Booklets.

Send all letters in a separate envelope.

2. Postage Rates

Take your Assignment Booklet to the post office and have it weighed. Attach enough postage and seal the envelope. Assignment Booklets will travel faster if correct postage is used and if they are in large envelopes that are no more than two centimetres thick.

FAXING

1. Assignment Booklets may be faxed. Contact your teacher for the fax number.

2. All faxing costs are the responsibility of the sender.

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Grade Two Mathematics

Module 8

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Assignment Booklet 8A

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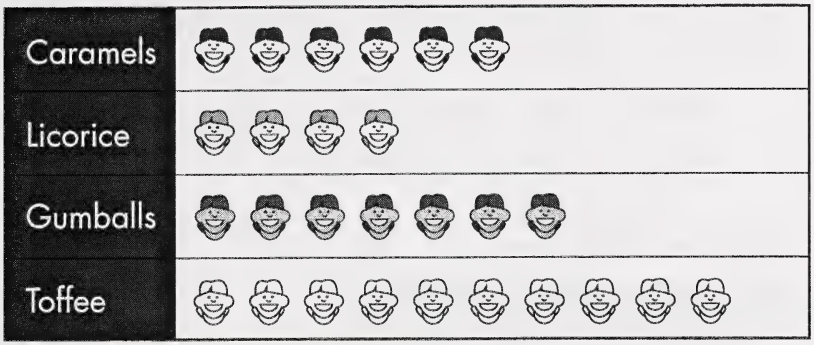
Look at the graph.

Favourite Candy of Mrs. Hong's Grade 2 Class



Think of four questions you can ask a friend about this graph and print them on the lines.

- _____

_____

- _____

_____

- _____

_____

- _____

_____

1. What are three ways of collecting data?

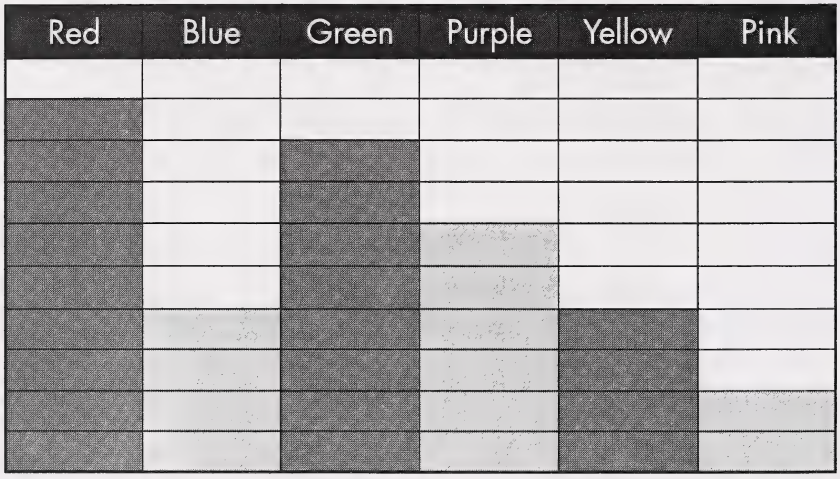
_____

_____

_____

2. Look at the graph. Then answer the questions about the graph.

Andrea's Family's Favourite Colours



a. What information does the graph give you? _____

_____

b. What is the favourite colour? _____

c. What is the least favourite colour? _____

d. How many people like purple? _____

e. How many people like yellow? _____

f. How many people were surveyed? _____

1. What are three ways of recording data?

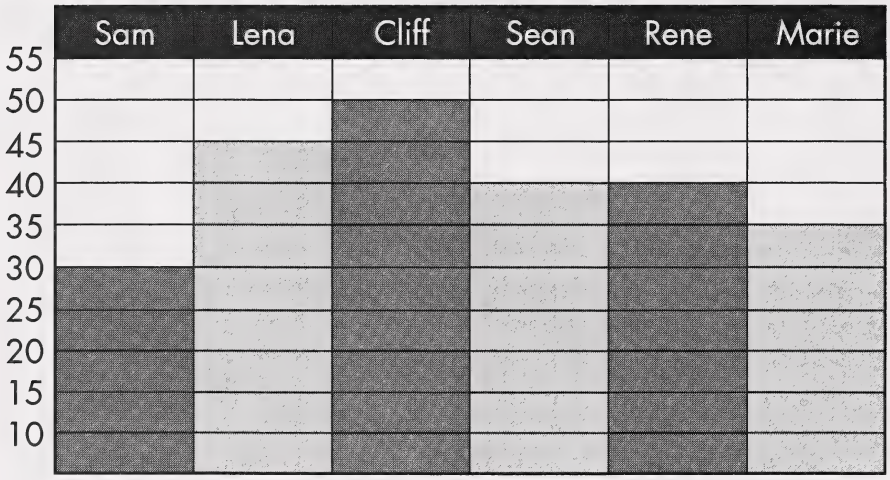
_____

_____

_____

2. Look at the graph. Then answer the questions about the graph.

Jae's Friends' Weight in Kilograms



a. What information does the graph give you? _____

_____

b. Who weighs the most? _____

c. Who weights the least? _____

d. How much does Rene weigh? _____

e. How much does Lena weigh? _____

f. How many people were weighed? _____

1. What are three ways of presenting data? Name the three types of graphs you learned about.

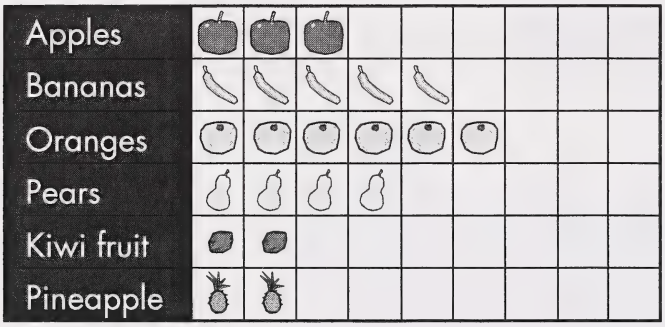
_____

_____

_____

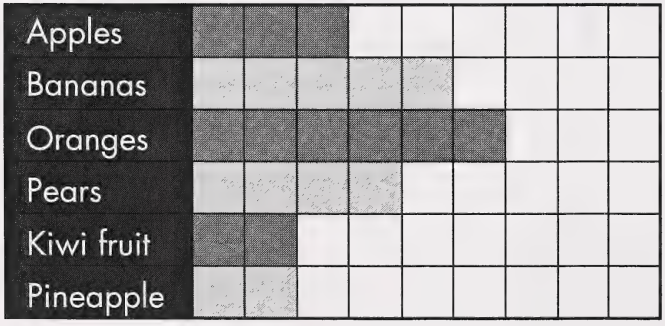
2. Name the type of graph. Put your answer on the line below each graph.

a.

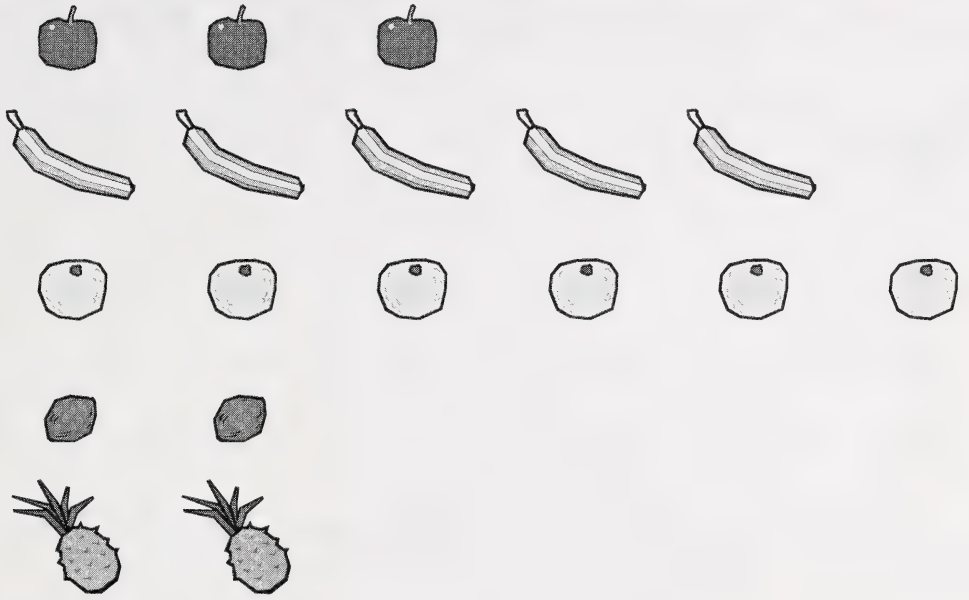


_____

b.



_____

c. 

_____

Sandra counted the flowers she had in her garden. She recorded the number with tally marks.

roses 𝍸 |

tulips |||

daffodils 𝍸 |||

irises ||||

1. Make a bar graph of the data she recorded. Print a title for your graph. Print the names of the flowers beside the rows.

_____

2. Answer the questions about the data on the lines.

   a. What does the data tell you? _____

   _____

   b. Which flower is there the most of? _____

   c. How many more roses are there than irises? _____

3. Print two more questions you can ask about this graph on the lines.

- _____

_____

- _____

_____

Sianna asked her friends how many books they had read in the last month. She recorded the information this way.

Nathan ||||

Nicole ||||

Rafael |||| |

Liam |

Stacey |||| ||

Jenna ||

1. Make a picture graph with the data. Print the title and names of the children.

2. Print your answers on the lines.

   a. Who read the most books? _____

   b. Who read the least books? _____

   c. Who read more books, Stacey and Rafael or Liam and Nicole?

   _____

3. Print two more questions you can ask about the data in the graph.

   • _____

   _____

   • _____

   _____

Student Survey

Days 1 to 9

Think about what you have learned about data and graphs in Days 1 to 9. Then answer these questions.

What did you find easy about Days 1 to 9?

List **three** things you learned about data and graphs in Days 1 to 9.

Student Survey

Is there something you would like to know more about?

Is there something you still need help with?

Student Checklist

Days 1 to 9

I know how to . . .	Put a check mark beside the things you can do.
1. collect data	
2. record data and use tally marks	
3. organize data with charts, lists, and pictures	
4. make and label picture, bar, and object graphs	
5. talk about the data a graph shows	
6. think of questions to ask about a graph	

Home Instructor's Evaluation Checklist

Days 1 to 9

Specific Outcomes/ Concepts Learned The student . . .	Has the student mastered the concept (yes or no)?
1. formulates the questions and categories for data collection, and actively collects first-hand information	
2. chooses an appropriate recording method, such as tally marks, to collect data	
3. organizes data, using graphic organizers such as diagrams, charts, and lists	
4. constructs and labels concrete object graphs, pictographs, and bar graphs	
5. discusses data and can draw and communicate appropriate conclusions	
6. generates new questions from displayed data	

Home Instructor's Feedback